SEQUENCE LISTING

<110> KIKKOMAN CORPORATION

(<120> LUCIFERASE AND A METHOD FOR DETECTING INTRACELLULAR ATP USING THE SAME

<130> P98-0634

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<150> JP97/361022

<151> 1997-12-26

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<170> PatentIn Ver. 2.0

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ttt tac cct att gaa gag gga tct gct gga gca caa ttg cgc aag t Phe Tyr Pro Ile Glu Glu Gly Ser Ala Gly Ala Gln Leu Arg Lys T 20 25 30	at 96 yr
atg gat cga tat gca aaa ctt gga gca att gct ttt act aac gca c Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala I 35 40 45	ett 144 Jeu
acc ggt gtc gat tat acg tac gcc gaa tac tta gaa aaa tca tgc Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys 50 55 60	tgt 192 Cys
cta gga gag gct tta aag aat tat ggt ttg gtt gat gga aga Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg 65 70 75	att 240 11e 80
gcg tta tgc agt gaa aac tgt gaa gaa ttc ttt att cct gta tta Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu 85 90 95	Ala
ggt tta ttt ata ggt gtc ggt gtg gct cca act aat gag att tac Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr 100 105 110	act 336 Thr
cta cgt gaa ttg gtt cac agt tta ggc atc tct aag cca aca at Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Il 115 120 125	t gta 384 e Val

ttt agt tct aaa aaa gg Phe Ser Ser Lys Lys Gl	a tta gat aaa gt y Leu Asp Lys Va 135	t ata act gta ca I lle Thr Val Gl 140	a aaa acg 432 n Lys Thr
gta act gct att aaa ac Val Thr Ala Ile Lys Ti	cc att gtt ata to nr lle Val lle L	tg gac agc aaa gt eu Asp Ser Lys Va 155	g gat tat 480 .1 Asp Tyr 160
aga ggt tat caa tcc a Arg Gly Tyr Gln Ser M	et Asp Asn Phe I	tt aaa aaa aac a le Lys Lys Asn T	ct cca caa 528 hr Pro Gln 175
ggt ttc aaa gga tca a	igt ttt aaa act g Ser Phe Lys Thr '	Val Glu Val Asn A	gc aaa gaa 576
caa gtt gct ctt ata Gln Val Ala Leu Ile	atg aac tct tcg Met Asn Ser Ser	ggt tca acc ggt Gly Ser Thr Gly	ttg cca aaa 624
195 ggt gtg caa ctt act Gly Val Gln Leu Thr	200 cat gaa aat ttg His Glu Asn Leu	Val Thr Arg Phe	tct cac gct 672 Ser His Ala
210 aga gat cca att tat Arg Asp Pro Ile Tyr	gga aac caa gtt Gly Asn Gln Val	tca cca ggc acg Ser Pro Gly Thr	Ala ile Leu
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Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly 245 250 255

- tat cta act tgt ggt ttt cgt att gtc atg tta acg aaa ttt gac gaa 816
 Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu
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- gag act ttt tta aaa aca ctg caa gat tac aaa tgt tca agc gtt att 864 Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile 275 280 285
- ctt gta ccg act ttg ttt gca att ctt aat aga agt gaa tta ctc gat 912 Leu Val Pro Thr Leu Phe Ala IIe Leu Asn Arg Ser Glu Leu Leu Asp 290 295 300
- aaa tat gat tta tca aat tta gtt gaa att gca tct ggc gga gca cct 960 Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro 305 310 315 320
- tta tct aaa gaa att ggt gaa gct gtt gct aga cgt ttt aat tta ccg 1008 Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro 325 330 335
- ggt gtt cgt caa ggc tat ggt tta aca gaa aca acc tct gca att att 1056 Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile 340 345 350
- atc aca ccg gaa ggc gat gat aaa cca ggt gct tct ggc aaa gtt gtg 1104 lle Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val

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Pro	Leu	Phe	Lys	Ala	Lys	Val	lle	Asp	Le	u As	г д	hr	Lys	Lys	Thr	· Le	eu	
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ggr	ccg	aac	aga	cgt	gga	gaa	gtt	tgt	gt	a a	ag g	ggt	cct	ate	g ct	t a	tg	1200
Clu	Pro	Asn	Arg	Arg	Gly	Glu	Val	Cys	. Va	1 L	ys (Gly	Pro	Me	t Le	u M	et	
385		7,571		0	390						95					4	00	
	ı ggt	ta 1	t ota	gat	aat	сса	. gaa	ı gca	a ao	ca a	.ga	gaa	ato	at	a ga	t g	aa	1248
aaa	Gly	. Tu	. Val	Aer	. Asr	Pro	. Glu	ı Ala	a Tl	hr A	arg	Glu	116	e II	e As	p G	lu	
Lys	3 613	/ 1 y 1	l va	405						10					41	5		
				400	,													
							- ~0	+ a t	t a	a a	tat	t a.c	n ga	t ga	ia ga	aa a	aaa	1296
ga	a gg	t tg	g tt	g ca	c ac	a gg	a ga	1 41	. 6	55	Tur	Tu	r Ac	n Gi	in G	lu l	Lys	
G1	u Gl	y Tr	p Le	u Hi	s Th	r Gl	y As			1 y	1 y 1	1 y	ı nə	ρ 0.	30		- • ·-	
			42	0				42	25					40	50			
																	~~0	1344
ca	ıt tt	c t	tt at	c gt	g ga	t cg	t tt	gaa	ag 1	tct	tta	at	c aa	ia t	ac a	aa	gga	1044
Hi	s Ph	ne Pl	ne II	le Va	ıl As	ıA q	g Le	eu L	ys S	Ser	Leu	i I1	e Ly	s T	yr L	y S	GIY	
			35				44						4	1 5				
	at c	^ ~ ~	ta c	ca c	ct g	ct g	aa t	ta g	aa	tct	gtt	t c	tt t	tg c	aa (cat	cca	1392
ι.	aı c yr G	aa g	al D	no D	ro A	la G	tu L	eu G	lu	Ser	Val	1 L	eu L	eu (31n l	His	Pro	
Т			aı r	10 1	10 h							4	60					
	4	50				4	55					-						
									~ ~ ^	a++	cc	a m	at c	ect :	ata	gct	ggt	1440
a	at a	itt 1	ttt §	gat g	CC 8	gc g	tt g	ct (s g C	gil	D.	a B	ar 1)ro	110	Ala	GIV	,
I	Asn :	lle l	Phe I	Asp A	Ala (31y V	al A	Ala (Gly	vai			sh t	10	116	,, 1 a	480	1
4	165				Į.	170					47	5					400	,

gag	ctt	ccg	gga	gct	gtt	gtt	gta	ctt	aag	aaa	gga	aaa	tct	atg	act	1488
Glu	Leu	Pro	Gly	Ala	Val	Val	Val	Leu	Lys	Lys	Gly	Lys	Ser	Met	Thr	
Old	200		·	485					490					495		
ฮลล	ลลล	gaa	gta	atg	gat	tac	gtt	gct	agt	caa	ġtt	tca	aat	gca	aaa	1536
Glu	Lvs	Glu	Val	Met	Asp	Tyr	Val	Ala	Ser	Gln	Val	Ser	Asn	Ala	Lys	
Ulu	<i>D</i> , 0		500					505					510			
cøt	ttg	cgt	ggt	ggt	gtc	cgt	ttt	gtg	gac	gaa	gta	cct	aaa	ggt	ctc	1584
Arg	Leu	. Arg	Gly	Gly	Val	Arg	g Phe	Val	Asp	G1 u	Val	Pro	Lys	Gly	Leu	
131 &	, 200	515					520					525				
a.c.	t ggʻ	t aaa	a at	t gac	ggt	t aaa	a gca	att	aga	gaa	ata	a cts	g aa	g aaa	a cca	1632
Th	r G1:	y Ly:	s II	e Ası	Gly	y Ly:	s Ala	ı Ile	e Arg	g Glu	ı I1	e Lei	ı Ly	s Ly:	s Pro	
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_		a Ly														
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Phe Tyr Pro Ile Glu Glu Gly Ser Ala Gly Ala Gln Leu Arg Lys Tyr 20 25 30

Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala Leu 35 40 45

Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys 50 55 60

Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg Ile 65 70 75 80

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Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr 100 105 110

Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Ile Val 115 120 125

Phe Ser Ser Lys Lys Gly Leu Asp Lys Val Ile Thr Val Gln Lys Thr 130 135 140

Val Thr Ala Ile Lys Thr Ile Val Ile Leu Asp Ser Lys Val Asp Tyr 145 150 155 160

Arg Gly Tyr Gln Ser Met Asp Asn Phe Ile Lys Lys Asn Thr Pro Gln

Gly Phe Lys Gly Ser Ser Phe Lys Thr Val Glu Val Asn Arg Lys Glu
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Gln Val Ala Leu Ile Met Asn Ser Ser Gly Ser Thr Gly Leu Pro Lys 195 200 205

Gly Val Gln Leu Thr His Glu Asn Leu Val Thr Arg Phe Ser His Ala 210 215 220

Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu 225 230 235 240

Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly 245 250 250

Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu 260 265 270

Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile 275 280 285

Leu Val Pro Thr Leu Phe Ala Ile Leu Asn Arg Ser Glu Leu Leu Asp 290 295 300

Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro 305 310 315 320 Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro 325 330 335

Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile 340 345 350

lle Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val 355 360 365

Pro Leu Phe Lys Ala Lys Val Ile Asp Leu Asp Thr Lys Lys Thr Leu 370 375 380

Gly Pro Asn Arg Arg Gly Glu Val Cys Val Lys Gly Pro Met Leu Met 385 390 395 400

Lys Gly Tyr Val Asp Asn Pro Glu Ala Thr Arg Glu Ile Ile Asp Glu
405 410 415

Glu Gly Trp Leu His Thr Gly Asp Ile Gly Tyr Tyr Asp Glu Glu Lys
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His Phe Phe Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly
435 440 445

Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro 450 455 460

Asn lle Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly 465

Glu Leu Pro Gly Ala Val Val Leu Lys Lys Gly Lys Ser Met Thr
485 490 495

Glu Lys Glu Val Met Asp Tyr Val Ala Ser Gln Val Ser Asn Ala Lys
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Ala	Leu	Cys	Ser	Glu	Asn	Cys	Glu	Glu	Phe	Phe	Ile	Pro	Val	Leu	Ala	
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øø t	tta	ttt	ata	ggt	gtc	ggt	gtg	gct	cca	act	aat	gag	att	tac	act	336
Glv	Leu	Phe	lle	Gly	Val	Gly	Val	Ala	Pro	Thr	Asn	Glu	He	Tyr	Thr	
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Leu	Arg	Glu	Leu	Val	His	Ser	Leu	Gly	lle	Ser	Lys	Pro	Thr	lle	Val	
	_	115					120					125				

+++	a or t	tet	aaa	aaa	gga	tta	gat	aaa	gt	t a	ta	act	gt	a ca	aa a	aaa	ac	g	432
Dho	Ser	Ser	Lvs	Lys	Gly	Leu	Asp	Lys	. Va	ıl I	le	Thr	Va	1 G	ln !	Lys	Th	r	
FIIC	130	001	2,-	•		135						140							
	100																		
σta	act	gct	att	aaa	acc	att	gtt	ata	a t	tg g	gac	ago	aa	ıa g	t g	gat	ta	a t	480
Val	Thr	Ala	Ile	Lys	Thr	He	Val	11	e L	eu /	Asp	Ser	. Г й	s V	al	Asp	T	y r	
145	1 2				150						155						1	60	
140																			
ล ฮล	øg t	tai	t caa	ı tco	atg	gao	aac	: tt	t a	.tt	aaa	aa	a a	ac a	ect	cca	a c	aa	528
Δro	GIV	TVI	r Gli	n Ser	· Met	Ası	Ası	n Ph	e I	1e	Lys	Ly	s A	sn [Γhr	Pro	o G	l n	
111 5	, 01,	- ,		165						70						17	5		
																			_
gg	t tt	c aa	a gg	a tc	a ag	t tt	t aa	a a	ct s	gta	gaa	gt	t a	ac	cgc	aa	a g	gaa	576
G1	y Ph	e Ly	s Gl	y Se	r Se	r Ph	e Ly	s T	hr '	Val	Glu	ı Va	.1 A	Asn	Arg	Ly	s (Glu	
			18						85						190)			
																			004
ca	a gt	t go	ct ct	t at	a at	g aa	c to	t t	cg	ggt	tc	a a	cc :	ggt	ttg	g CC	ca	aaa	624
G I	n Va	1 A	la Le	eu Il	e Me	t As	sn Se	er S	er	Gly	Se	r T	hr	Gly	Lei	ו או	0	Lys	
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																			670
gs	gtg	tg c	aa c	tt a	ct ca	it g	aa a	at a	ıtc	gto	ac	t a	ga	ttt	tc	t c	ac	gct	672
G	ly V	al G	ln L	eu T	hr H	is G	lu A	sn	I l e	Val	Th	r A	rg	Phe	Se	r H	is	Ala	
		10					15						20						
																			700
a	ga g	at c	ca a	ıtt t	at g	ga a	ac c	aa	gtt	tca	a co	ca s	ggc	acg	gg	ct a	itt	tta	720
A	rg A	sp F	oro l	le T	yr G	ly A	sn (Gln	Val	Se	r Pi	ro (Gly	Thr	· A]	la I	lle	Leu	
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act g	gta	gta	cca	ttc	cat	cat	ggt	ttt	ggt	atg	ttt	act	act	tta	ggc	768
Thr \	Val	Val	Pro	Phe	His	His	Gly	Phe	Gly	Met	Phe	Thr	Thr	Leu	Gly	
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Туr	Leu	Thr	Cys	Gly	Phe	Arg	lle	Val	Met	Leu	Thr	Lys	Phe	Asp	Glu	
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Glu	Thr	Phe	Leu	Lys	Thr	Leu	Gln	Asp	Tyr	Lys	Cys	Ser	Ser	Val	lle	
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															c gat	912
Leu	Val	Pro	Thi	Lei	ı Phe	Ala	lle	e Leu	Asn	Arg	g Ser	Glu	ı Leu	Le	u Asp	
	290)				295	5				300)				
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aaa	. ta	t ga	t tt	a tc	a aat	t tta	a gti	t gaa	ati	t gca	a tc	t gg	c gga	ı gc	a cct	960
Lys	Ту	r As	p Le	u Se	r Ası	n Lei	u Val	l Glu	ı 116	e Ala	a Se	r Gly	y Gly	y Al	a Pro	
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. G1	y Va	al A	rg G	ln G	ly Ту	r Gl	y Le	eu Th	r Gl	u Th	r Th	ır Se	er Al	a I	le Ile	;
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Lys	Gly	Tyr	Val	Asp	Asn	Pro	Glu	Ala	Thr	Arg	Glu	He	He	Asp	Glu	
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gaa	ggt	tgg	ttg	cac	aca	gga	gat	att	ggg	tat	tac	gat	gaa	gaa	aaa	1296
G l u	Gly	Trp	Leu	His	Thr	Gly	Asp	lle	Gly	Tyr	Tyr	Asp	Glu	Glu	Lys	
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cat	ttc	ttt	atc	gtg	gat	cgt	ttg	aag	tct	tta	atc	aaa	tac	aaa	gga	1344
His	Phe	Phe	lle	Val	Asp	Arg	Leu	Lys	Ser	Leu	lle	Lys	Tyr	Lys	Gly	
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Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Ile Val 115 120 125

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Gly Val Gln Leu Thr His Glu Asn Ile Val Thr Arg Phe Ser His Ala 210 215 220

Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu 225 230 235 240

Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly 245 250 255

Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu 260 265 270

Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile 275 280 285

Leu Val Pro Thr Leu Phe Ala Ile Leu Asn Arg Ser Glu Leu Leu Asp 290 295 300

Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro

 305 310 315

Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro 325 330 335

Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile 340 345 350

Ile Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val
355 360 365

Pro Leu Phe Lys Ala Lys Val Ile Asp Leu Asp Thr Lys Lys Thr Leu 370 375 380

Gly Pro Asn Arg Arg Gly Glu Val Cys Val Lys Gly Pro Met Leu Met 385 390 395 395

Lys Gly Tyr Val Asp Asn Pro Glu Ala Thr Arg Glu Ile Ile Asp Glu
405 410 415

Glu Gly Trp Leu His Thr Gly Asp Ile Gly Tyr Tyr Asp Glu Glu Lys
420 425 430

His Phe Phe Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly 435 440 445

Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro 450 455 460

Asn Ile Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly
465 470 475 480

Glu Leu Pro Gly Ala Val Val Leu Lys Lys Gly Lys Ser Met Thr
485 490 495

Glu Lys Glu Val Met Asb Tyr Val Ala Ser Gln Val Ser Asn Ala Lys
500 505 510

Arg Leu Arg Gly Gly Val Arg Phe Val Asp Glu Val Pro Lys Gly Leu 515 520 525

Thr Gly Lys Ile Asp Gly Lys A la Ile Arg Glu Ile Leu Lys Lys Pro
530 540

Val Ala Lys Met

545

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